



AUGUST 1987

COLORADO SPRINGS,  
COLORADO

**PIKES PEAK RADIO AMATEUR ASSOCIATION, INC.**

P.O. Box 16521  
Colorado Springs, CO 80935

**FIRST CLASS MAIL**



# Ø BEAT



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\* Denotes 2 year term beginning October 1986

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The Pikes Peak Radio Amateur Association meets on the second Wednesday of each month at Giuseppe's Depot Restaurant at 10 S. Sierra Madre at 7:30 p.m. All amateurs and interested parties are invited to attend.

Editor: Phil Somers VE1ARC, 1075 Allegheny Dr. Colorado Springs, CO 80919 590-7136

## The 65th Pike's Peak Auto Hillclimb

by Malcolm KE9B

Three years ago, the Amateur Radio operators of Colorado Springs were asked to provide a communication network for the Pike's Peak Auto Hillclimb. The operators would observe the race cars as they raced up the 12.42 mile Pike's Peak Highway from the beginning of the gravel to the summit.

This year, 58 amateur operators filled these positions. Don Ross, NL7CO, performed the most boring duty but necessary task of the day. He was responsible for checking in the other operators as they arrived, passed out hats to those that had not received them, and stayed awake all night to do this. My personal thanks to you, Don, for doing this.

Race day dawned cool and windy with a cloud cover over Colorado Springs. All of the Amateur Radio operators were in their positions ready for a day of racing to begin.

The Vintage Challenge started the day and, of the 13 cars that ran, only one had any problems. Considering the age of these cars, this was quite an accomplishment. There would be four more classes that would compete. They were Production Rally, Stock Cars, Open Wheel, and Open Rally.

Three of the four winners in the competition classes set records: John Crawford in the Production Rally class with a time of 13 minutes 46.61 seconds at an average speed of 54.08 mph, Bill Brister in the Open Wheel class with a time of 11 minutes 29.70 seconds at an average speed of 64.91 mph, and Walter Rohrl in the Open Rally class with a time of 10 minutes 41.85 seconds at an average speed of 69.66 mph. Leonard Vahsholtz won the Stock Car class with a time of 12 minutes 58.55 seconds at an average speed of 57.43 mph.

Twelve cars failed to make it to the top. The Stock cars had mishaps at spotter locations 2, 3, 4, and 15 - W9MHL Mike and KA0YLR Sylvia, N0GYW Jerry, KQ0XH Bill, and WA5BKK Jim. The Open Wheel drivers had their problem at locations 7, 28, 32, and 35 - WD6CDC Jim, WB7TQN Bill, KA0BEN Pat, and KA0BXX Greg. The final group to run, the Open Rally, had their difficulties at spots 8, 45, and 48 - N8CIX George, WA0SXE Jim, and WB0DUM George. The six cars in the Production Rally class had successful runs.

## AUGUST MEETING

The next regularly scheduled meeting of the Pikes Peak Radio Amateur Association will be held on Wednesday, August 12 at 7:30 PM at Giuseppe's Depot at #10 S. Sierra St. The program will be a special program on Club Expansion.

## "THE VIEW FROM THE PEAK"

by George Hinds, N8CIX

### HOW TO HAVE SOME FUN -- AND ENJOY A DAY IN THE NATIONAL FOREST, TOO...

I have participated in just about all forms of amateur radio public service at some time or other, but never had I experienced a day at a "Motorcycle Enduro." My day at the Wildhorn Ranch this summer when several amateurs from PPRAA provided communications for such an event was filled with entertainment: the cyclists did the entertaining...

At my checkpoint, 31 miles into the course that was 104 miles in length, I was amazed to see those dirt bikes come over the hill and, with some losing traction on the steep slope, sail into trees or roll down a hill into a fast-running creek. If into a tree, one or more of the checkpoint personnel would help extricate the bike from the limbs; if into the creek, it was the cyclist himself (or herself) who would labor long and hard at pulling the bike up from the water and onto solid ground. In either case, it was not uncommon to see some pained facial contortions and/or hear some rather choice language mixed in with the crashing of tree branches or the splashing of water; language decidedly not of the type to appear in a family publication such as *Beat*...

Another point not to overlook: a big barbeque the evening preceding the Enduro when cyclists, families and friends (and hams) gather at the Wildhorn Ranch. Many arrive in campers, some stay in the ranch accommodations, and there are "tenters" who set up camp from a bedroll carried on the back of their bikes.

I enjoyed this event: the bikers are rather congenial folks who are mostly friendly and enjoy a chat with those who show an interest in what they are doing. Communications via ham radio is important; on the forest trails where this event takes place there are a great many built-in dangers to the riders from logs, tree limbs, rocks, precipitous slopes and steep grades.

When this event comes up next year, offer to help with communications - if you have as much fun as I did, you'll go back again the following year, too...

## YOU DON'T HAVE TO BE CRAZY, BUT IT HELPS..

To maintain your sense of perspective while you're a volunteer amateur radio operator assisting on the annual Pikes Peak Hill Climb "Race to the Clouds."

After all, why would anyone possessed of even one-half a brain want to aim a car at speeds over 100 m.p.h. up the dirt road to the Peak; to take corners designed for 10 m.p.h. at 40, and do any number of equally hare-brained stunts for a brief measure of fame and an even briefer measure of fortune? And why are thousands of spectators eager to withstand the changeable weather on the mountain, plus the rocks and dust thrown their way by race cars, just to watch auto racing history being made in a few short hours? And don't overlook the long, slow descent from the mountain when the race is over - for speed, it's the nearest thing to a traffic jam on the L.A. freeways...

In fact, one obviously beer-laden joker near my spotter position, tired of being stalled in traffic, vented his feelings of exasperation by standing up, dropping his shorts and "mooning" the cars behind him - one of which, a convertible, contained two young ladies busily filming this exciting event with a video camera for the sake of posterity (pun intended).

From the number of vehicles descending the mountain at the end of the race, it's a wonder that Pikes Peak didn't lose several feet in elevation that one day by sheer weight compressing the granite from the top down.

Added to the usual communications load assumed by ham operators this year in several areas was the use of fast-scan TV between the start and finish lines. It seems that each year, amateur support to the Hill Climb grows - it's the kind of solid support that the race committee just couldn't afford to commercially pay for, yet can't afford to be without - and that's not all bad for promoting amateur radio in this region.

### THINGS I'D RATHER NOT HEAR SO MUCH...

The increasing use of "Q" signals on voice modes: especially "QSL" or "I QSL" as a universal reply -- imagine talking to a ham friend on the street and using "QSL" repeatedly as an answer! Just as boring is "Roger" or "Rog" over and over... Adios!

## SATELLITE TRACKS

by Keith Goodie, NYØT / VE3PDD

It has been a couple of months since I wrote a satellite oriented article for Q-Beat and needless to say, many things have happened in the world of satellites. What I hope to do is to bring you up to date on the latest satellite happenings.

Oscar 10, often regarded by most as finished, has again seen service in the last two months. This satellite was given up for lost when its computer control system failed to respond to commands from ground stations and was often referred as being "brain dead". One of the things that the ground controllers could do was to leave the satellite in a permanent Mode A (435 Mhz up and 145 Mhz down) condition. With very favourable sun angles, the bird yields excellent signal conditions and I myself have worked many stations in the continental US, Canada, Japan, Australia, New Zealand and Hawaii. Starting in mid-September, the satellite will not be able to charge its batteries as readily from the sun and limited operations will be imposed. All in all, it is very enjoyable to have this system back in operation again.

Japan Fuji Oscar 12 now has its packet bulletin board software in operation and many stations are starting to use it to send messages to their friends in various parts of the globe. Use of this PBBS system is very similar to that one would use in a land contact with a PBBS station. The callsign is BJ1JAS and frequencies that this system can be heard on are 145.85, 145.87, 145.89, and 145.91 Mhz.

The Soviets have launched two new satellites called RS-10 and RS-11 respectively. They contain the usual ROBOT QSO makers/generators and some interesting combinations of bands for use as transponders. They are using 15, 10, and 2 meters in various combos should result in some interesting experiments. If you would like to have the frequencies being used, they are available off the local Packet BBS (WBØBLV) or give me a shout on 52.

That is all for now and if you have any questions regarding amateur satellites and how to use them, contact me on 52 simplex or you may enquire on the Colorado AMSAT Net held every Wednesday night at 2100hrs on the 147.225 (WDØFVV) repeater.

Field Day 1987

by Max KDØEL

The PPRAA Field Day activities were held this year at our usual site on Rampart Range road north of Woodland Park. Activities started officially Saturday morning with the setup of stations. The contest started at noon and lasted until noon on Sunday. A meal was served, compliments of the Club, on Saturday evening and Sunday morning to all participants. Novice operators were able to exercise their CW and new voice privileges on several bands. The CW station logged the most contacts this year with 464 contacts. The SSB station had 308 contacts and the novice station had 56 on several modes. We were active on packet radio on two meters and successfully copied the Field Day Bulletin from the ARRL. The Natural Power Station was unable to operate again this year due to problems with the solar power panel. Hopefully, this will be resolved before next years activities.

Field Day presents us with a chance to hone our skills of communication on a basis that would be presented to us at a real emergency, and to show these skills to the community. It also provides all who participate with a chance to camp out and to see some of Colorado's beautiful forests, and have fun with other members of our club.

I would like to personally thank all the people who participated this year and made Field Day a success.

## FOR SALE

Heath HR-1680, HX-1681 CW station, PS-30 power supply. Transmitter excellent, receiver needs recalibration on 80 and 10. All manuals. \$230.

Mark NØEPF (303) 594-6916

## VHF & ABOVE NEWS

by NKØP

All July turned out to be a very gud month for Six and Two meter enthusiasts with several outstanding E-Skip openings. The most dramatic one was 29 June on Two Meters. I had a vacation day and was sitting in the shack about 1600 Local time and heard K4WOB in FM 17 (near Norfolk, Virginia). From then on it was pandemonium on 144.200 until about 2030 MDT. Myself, NØCMW, KXØO, WA9ABB, NL7CO, NØHQD, and WØMXY all worked stations as fast as we could talk! KXØO reported working several stations per minute for over ½ hour! Stations from New York south to Georgia and as far west as St. Louis were heard like local stations. In fact most stations I heard were louder than the local stations! One station locally reported working over 20 stations with 10 watts and a 2 element beam! As if that wasn't enough on 7 July the band opened again to the south east about 7PM local time. Although this opening was not as dramatic many new stations were heard from this QTH.

The six meter activity was equally excellent with openings to numerous to mention. Mother Nature smiled on both the ARRL VHF contest and the CQ WPX contest with long band openings. At one point I could here the east coast working west coast stations both equally strong. Their were reports of stations in 8 land working Europe! Hopefully this is just the teaser for a new solar cycle. The Central States VHF Conference had over 300 attendees and featured a guided tour of all the Dallas areas surplus houses.

August features the ARRL UHF contest. Bands 200MHZ and above only for this one. See July QST page 79 for details.

August also features the best meteor shower of the year, the PERSEIDS. It should peak August 12th between 1300 and 1430 GMT.

Mike Stahl K6MYC (formerly with KLM) has started his own antenna business with a line of long yagis aimed at the serious VHFer. (From the 2-Meter EME Bulletin, May 25, 1987) Well, thats about all the excitement I can stand so 73's and C U on the bands!

### VE TESTS

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## ANTENNAS

By Chris Smith  
NX0E

Apertures are antennas that aren't there. That is, antennas are usually defined by the presence of conducting materials (such as wires or tubes) but aperture antennas are defined by the absence of conductors in an otherwise conducting area.

Let's take an example. Suppose you are in a large box made of metal without any holes. Even if you have your handy-talky with you, you won't be able to transmit out of the box or receive any signals from outside the box either. That stands to reason because the box is closed and there is no way for the signal to get in or out. Now suppose you cut a small hole, an inch or so in diameter, in one wall of the box. Signals now can get in and out of the box, but you might feel that such a small hole wouldn't do much good on 2m. You would be right. If you widened the hole so that it were a strip, say an inch wide by a meter long, you would suddenly find that it worked quite well.

In this case, you would have created an aperture antenna lying in the plane of the wall and defined by where you had cut away the metal. Such antennas would be hard to analyze if it were not for the principle of electric-magnetic duality. This is a property of electromagnetic waves which gets pretty complicated, but comes in handy in cases like this. It allows you to analyze the aperture antenna by mentally switching the metal and aperture (in the plane of the wall) if you also switch the electric and magnetic fields. In our example, the one inch by one meter hole becomes a piece of metal of the same dimension, and the metal wall becomes aperture, i.e. nothing. This case is just the familiar half-wave (on 2m) dipole, which we all know works quite well. The only tricky part is interchanging the electric and magnetic fields. If the strip were horizontal, we would expect it to radiate horizontal (electric) polarized waves. Because of duality, it radiates horizontal magnetic waves (which happens to give vertical electric waves). In other words, if you cut the slot in the wall horizontally, hold

the rubber duck antenna vertically for best results.

The study of apertures is useful and may play an increasing role in ham radio. The study of apertures is used in analyzing the leakage of signals from boxes such as computers, to help keep the RF garbage inside (and out of your rig). At shorter wavelengths, apertures make convenient antennas on vehicles. On aircraft, VHF and UHF antennas can be made flush to the surface, lowering drag. On a car, an aperture antenna can be made flush, and an antenna that "isn't there" is particularly hard for a vandal to break off! Who knows - an aperture antenna "may not be there" in the ham station of your future.

## 3905 CENTURY CLUB

by Joe KQ08

One of the nice things about amateur radio is that the hobby offers a wide range of FUN opportunities to satisfy an equally wide range of interests. In this article, I would like to discuss one opportunity that can provide you with many hours of fun and, once committed, a never ending challenge.

I am surprised by the number of hams of all license classes that have not WORKED ALL STATES (WAS). The reasons are many and I don't wish to take time to discuss them now. Rather, I prefer to discuss how both new and old hams can reach their goal while still having lots of fun.

Each evening on 7.233 Mhz, the 3905 Century Club WAS net meets from 0000 to 0400 hours (Zulu). The main purpose of this informal net - all hams invited - is to assist interested hams to work all states. From Monday through Saturday, the net also meets from 0400-0800 hours (Zulu). The Club also has other nets that meet on 75, 80, 160 meters plus CW and RTTY nets.

The challenge does not end there. The WAS does not come easy. If you are like me, you will soon come to believe that there are no hams in Rhode Island or Vermont. Or perhaps you will sweat out a contact in neighboring Wyoming.

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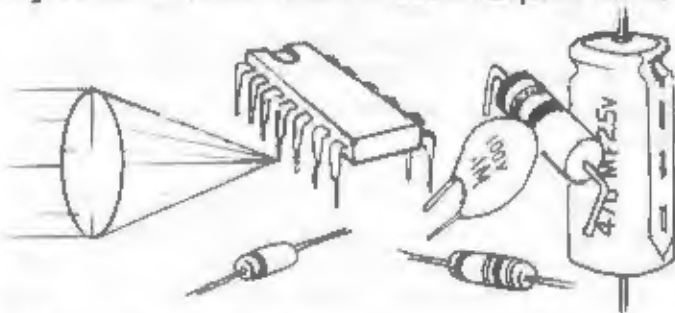
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Of course, you haven't achieved your goals until you have received your confirmation QSL cards. Here the Century Club comes to your aid by offering a FREE QSL bureau. This service not only saves you postage costs but relieves you of the need to look up callbook addresses.

If you have already WAS and are looking for a new challenge, the Club has a wide assortment to keep you busy for many many hours. For example, WORKED ALL STATE CAPITALS (I have been working on this one for over a year), WAS using only 2x2 callsigns, WAS five times without duplicating a prefix within a state. These are but a few of the challenges that the Club offers.

Finally, each year the Century Club holds an eye-ball reunion at a different location. This year, I attended the reunion at a KOA campground near Williams, Arizona. It was great to meet many of the people behind the voice and to make new friends.

So listen-in sometime soon - 7.233 Mhz. Take the challenge.

(Editor: Joe suggested that other PPRAA members probably know of many nets that would be of interest to all. How about a short article on your favorite net ????)

Another Opinion  
by Harvey WJ0J

A recent article entitled "Long QSOs on Repeaters" really got my attention. The view expressed there seemed to directly oppose the spirit of what ham radio is all about. Another view is presented here.

I believe that one of the major purposes of ham radio is just that: to replace Ma Bell and the postal service. Ham radio is a hobby of fraternity and friendship. That's why radios have a microphone on the front. The inherent design of repeaters prevents parties from "timing up the repeater for lengthy periods of time". The courtesy beep and the one minute timer prevent abuse and allow any ham needing to use the machine to break in and request the use of same. I've never heard any amateur breaking in to request use of the repeater and being refused the privilege. What a farce it would be for one ham, wanting to give information of a technical nature about his rig or an antenna, to call the other ham on the phone or send him a letter. Technical talk is the lifeblood of ham radio and belongs on the air.

As far as scanning radios go, I guess the ham writing the article just wants to hear silence as the scanner passes incessantly over ten to thirty frequencies, with the squelch never breaking. There is a solution. Most scanners are programmable, and frequencies can be deleted.

I agree that repeaters should be available for use as much as possible, and they are, 24 hours a day. But they are a resource which should be used, not left dormant. One added note, repeaters should be used when simplex operation will not suffice. I believe two hams intending to talk for a long period should check if they can accomplish their QSO on simplex - if not, go for the machine.

## WANTED

Heath SB-104 with power supply. Will consider additional matching station components.

Dave Allen - 590-2020

## "HAM RADIO AND RALLYING"

by Tom Kimball, KA8BZB

Rallying is one of the largest spectator sports in Europe. Thousands line the routes of such events as the famed Monte Carlo Rallye. In the USA, however, rallying is the least well known of motor sports.

Automobile rallying here is of two distinct types: Speed Rallies and non-speed Rallies. Non-speed Rallies include the popular Time-Speed-Distance (TSD for short) rallies and "Fun" or "Gimmick" events. Speed rallies are actual races, conducted on roads which have been closed and drivers go as fast as they can (or dare). It is these "speed" events which are of interest here.

In this country, the major organizer of rallies is the 40,000+ member Sports Car Club of America (SCCA). They sponsor a series of speed events which they call "Pro" rallies (though the vast majority of participants are amateurs). They also sanction a nationwide series of TSD rallies.

Pro rallies use special roads, closed to the public, called "stages". A stage may be from 1 to over 100 miles long, and from 50 to 500 total miles of stages will be used for an event. The winner is the team which completes the stages in the least total amount of time. Cars are started on each stage at a "start control" at 1 or 2 minutes intervals. The time each car starts is recorded, as is the time the car completes the stage at a "finish control". Between stages, competitors must obey traffic laws and otherwise behave as civilians as they "transit" to the next stage.

In recent years, safety concerns have played an increasing role in all facets of our lives. Rallies are no exception. About 8 years ago, a pair of "world class" rallyists were killed in a collision when they were allowed to start on a stage which had not been cleared. The lack of communication which contributed to the incident has been the primary emphasis of well organized safety plans for these events.

In this country, a large reservoir of

communicators has been recruited to support these events - Ham Radio. The ability of Hams to organize and reliably communicate has provided event organizers with outstanding support of their safety programs. Here is how we do the job...

Typically, 2 or more communicators will be assigned to each stage of a rally. One will be assigned at the start control and one at the finish. Additional hams will be stationed at significant intersections (if any) along the stage route. Let's look at how these communicators function for the running of a typical stage:

Before cars are due to start running the stage, the stage captain meets with his crew and the communicators. They establish a control location and close one end of the stage, usually the start. The captain will drive through to the other end, closing, barricading, and leaving various stage personnel at all intersections along the way. At the other end, they establish the other control. With a communicator at each end and the road "closed", one more drive-through will be made to make sure that the stage is clear while the communicators establish a positive link between the start and finish. When the course has been confirmed clear via the last drive-through and positive communications established, the organizers will be notified and clearance obtained to start the racing.

(to be continued)

### VHF STATION ON FIELD DAY

The VHF station was set up in trailer brought up by Al NØCMW using the call of NØCMW. Co-person in charge was Don NL7CO. Want to thank all who helped set up and who operated, especially Rick KDØSU who sat at the six meter station for over 4 hours with only one contact. Also Alan WB4DYU from Miami Fla who was visiting the area and dropped in to operate the 6 meter station as it opened for a couple hours after Rick left. Also to Brad KDØVM and others who dropped in but the bands did not cooperate with us for a good score. Also thank those who loaned gear to us. See you at Field Day next year. Thanks ..... Al NØCMW and Don NL7CO.



## RADIATION ANGLES

It has always been known that the height of an antenna, varied above ground will change it's "TAKE OFF ANGLE" or Radiation angle.

But how do you calculate such a thing. What about the frequency, does that effect angles too? Yes it too is a factor. Well what about the possible other lobes, do they exist and what is there take off angle? In some They too exist. Again the frequency and the height above ground, are factors in calculating these take off angles.

Using simple geometry, and considering a simple dipole, we can determine what a specific take off angle will be.

First is the height, which we will call "H1". Then there is the frequency, which we will call "F1"

Now we first will convert F1 into a usable figure for our calculation. With the following...

$L1 = 984 / F1$  When we have this calculated we can solve for the Arc tangent. Note this will be read in radians, which must be converted after our solution. With the formula,  $R1 = 180 / 3.14$ .

Our formula then is:

$A1 = \text{ATN}(L1 / (4 * H1))$ ..ATN.. =ARC TANGENT.

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THEN  $A1 = A1 * R1$  ..A1.. = the take off angle.

Now what about those second third and fourth lobes? Well the easier way to do all this is put it in a computer and let it do the work. If you would like a listing for this program, drop me a line or see me at the saturday morning breakfast. If you have a TI-99/4a, give me a disk and I will give you a copy.

For those who would like to punch in their own program. My address is

Paul McClure KDØSO  
1914 Wooten Rd  
Colorado Springs, Co.  
80915/1413  
Phone 591-2703

If you would like to see more of this type column. please let me know, of your interest.  
73s Paul

## MINUTES OF JULY GENERAL MEETING submitted by Al NØCNW, secretary

The general meeting of the Pikes Peak Radio Amateur Association was held at Giuseppe's Old Depot Restaurant, Wednesday evening 9 July 1987. The meeting was called to order by the president Don KEØBJ at 19:30.

The minutes of the previous General Meeting and Board Meeting were approved as printed in Ø-Beat, with the exception that Jim WA9ABB, not Ron NKØP, handled the raffle.

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## Committee Reports

Note: Anyone wishing to help out on any of these committees, please contact the chairman at the phone number listed. Thank you for your support.

Treasurer - Bud NØDDF (599-7499):  
Previous balancer \$2576.01, income of \$63.48, expenses of \$533.75, leaving balance of \$2105.74 as of 8 Jul. Final report on SwapFests: income \$2101.00, expenses \$1435.63 leaving profit of \$665.37.

Interference - Ron NKØP (593-8352):  
Some interference reported since six meters has been open. Interference on TV channels 2-3-4-5-6 may be from distant TV stations caused by E-skip.

Pikes Peak Hill Climb - Malcolm KE9S (488-2071):  
Don NL7CO volunteered for check-in duties at the gate.

Education - Les KCØNC (634-3995):  
Nothing firm on location yet. Had 6-7 inquiries. Les reported on Climb for Life request from Jaycees for 29 Aug. Need three volunteers to spend night on Barr Trail. Approx. \$25. was approved to cover volunteer expenses.

Publicity - Rick WB7THT (599-7655):  
Nil

Colorado Council of Amateur Radio Clubs (CCARC) - Bud NØDDF (599-7499): Nil

Deaf and Blind School - Jim WA9ABB: (598-7543):  
School out for the summer. Ray AAØL will install the new voice synthesizer on the school's rig. Jim introduced Frank KAØYPX, a novice from D&B School, one of Jim's students in ham classes.

O-Beat - Phil VE1ARC (590-7136):  
Newsletter award due to the strong support of contributors. Thanks to Keith NYØT and those who helped distribute O-Beat while Phil was on vacation.

ARES - Jim WA5SKK: (579-9129)  
District 14 is looking for an EC as Rob K4UBU is now the Eastern Slope DEC.

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**TAB BOOKS**

Public Service - Mike KØTER (636-1290):  
Nil

Field Day - Max KDØEL (590-9849):  
Don KEØGJ reported that a nice time was had by all. Weather cooperated and food was good. Results still unknown. Thanks to cooks, chairman, committee, help, and to all those who worked the stations.

VE Testing - Pete NØLA (495-4829):  
Next test will be 13 Aug at First Methodist Church, corner of St. Vrain and Nevada. Pete and Max reported that Craig Wiley passed the Novice test given during the meeting.

Picnic - Ron NKØP (593-8352):  
Picnic will be at 1300 hrs 2 Aug at Air Force Academy picnic area 3, across from the stadium. Passed around sign-up sheet and maps. Handi-talkies to be given away at picnic if enough tickets sold to pay for it. Prize for best T-shirt.

Enduro - Mike W9MHL (481-4401):  
The Enduro group greatly appreciated the help. Asked back next year, hopefully not on FD weekend.

Old Business:

By-Laws discussed and approved.

### New Business:

Thom - NEØHI Needs some speakers in electronics on "Quality Control".

Don - NL7CD: Thanked AXØD, NKØP and NØCMW for monitoring and reporting "openings".

Despite the picnic, there WILL be a general meeting in August.

Prizes - Ron NKØP:

### Winners were:

Herb	KDØQE	Repeater book
Ray	AAØL	\$10. from Centennial
Smitty	WBØLTV	\$10. from Wintronics
Nick	KØSN	\$20. from OEM Parts
George	NØCIX	Crimping tool
Nick	KØSN	Magazine
E.J.	KDØNB	Mobile mount
Don	KEØGJ	6146 tube
Doc	WØMCT	MARC Raffle Ticket
Jim	WØSSKK	MARC Raffle Ticket

### Program:

Don KEØGJ opened up the program as an open discussion on any topic. Phil discussed having seen world's tallest manmade structure, a 2060 ft TV tower in North Dakota. Smitty WBØLTV discussed the possible impact of Over-The-Horizon Backscatter radar. Ray AAØL discussed writing to Wash. about possible loss of 220 Mhz. Oak KØROL talked about ATV for the Hill Climb, and Dale N3EUA reported on packet plans for the Hill Climb.

The meeting was adjourned at 21:45 The next board meeting was planned for the Satellite Hotel on 15 Jul. The next general meeting will be 12 Aug.

### MINUTES OF JULY BOARD MEETING submitted by Al NØCMW

The Board meeting was held at the Satellite Hotel. Prior to business meeting the Board had evening meal there to check it out. Those present were Don KEØGJ, Ron NKØP, Chris NXØE, Nick KØSN, Phil VE1ARC, Jim WA9ABB, Al NØCMW, Bud NØDDF, and Susan KA7NNX.

The first thing decided was to not to move to the Satellite. We will try to have an activity section in Ø-Beat of things that may be coming up in future. Secretary was instructed to report that

the club was available to help the handicapped.

Had a request from the Campfire Girls for financial support. It was decided not to do so. It was decided not to buy any call books for the library. The Boy Scouts had requested we help them with a demo on amateur radio as their schedule Program had backed out. It was for Sat the 18th. We do not have enough time but Don & Chris will try to do something.

Al will try to get the pamphlet from the post office on special mailing rates. Bud will look into a generic QSL card that the Club might have made up and then sell. A mail demo was discussed. Ron and Bud will look into this. A discussion was held on club growth. It will be the topic for next Club meeting. It was decided that the club would order 3 Tuna In World novice books with one of them having the new 90 minute cassettes so instructors will have them.

Being no further business, meeting adjourned at 2145.



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**We will be closed the following dates for Hamfests:**

August 7-8-9 Amarillo, TX  
August 9 Jeffco Fairgrounds - Denver  
Sept. 4-5-6 Labor Day - Alamogordo, NM  
Sept. 11-13 Camp out Hamfest - Medicine Bow  
National Forest Campground near Laramie, WY

Due to Hamfest season, we are not running a product listing this month - we have (or can get quickly) nearly all ham equipment advertised by major companies and distributors in current ham catalogs and magazines and most at lower prices. If you call and get our answering machine, please leave your name and number and a message up to 1 minute long - we get them daily and will call you back, or if you leave an order and your address, we'll ship it that day or next.

**Some specials on New Equipment**

Kenwood TM221A - 2 meter FM 45 W rcv from 138-174 MHz w/TTM - \$355.  
Kenwood TM421A - 70 cm 35 W w/TTM \$365.  
Kenwood TM2530 - \$349.  
Kenwood TM2550 - \$379.  
Kenwood 2570 - \$449.  
Kenwood TS440S w/AT - \$1000.  
Kenwood TS430S - \$740.  
Icom 28H - Now with TTM - Sale \$425.  
Icom 28A - Now with TTM - Sale \$398. w/o TTM - \$365.  
Icom 735 - Sale \$798.  
Yaesu FT 767GX - \$1425.  
Yaesu FT757GX - \$765. Mark II - \$945.  
Yaesu FT727R - 2M/70 cm HT - \$398. New CPU.  
Yaesu FT23R - \$265. w/TTP.  
Kantronics KAM - \$275.  
MFJ 1274 VHF/HF Packet Controller \$139.  
AEA PK 232 w/FAX - \$298.

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**Thanks for your support, — Jess KØTAA**

*We'll look forward to seeing you at one of the hamfests!*

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**Membership Application**  
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